

Claims:

What is claimed is:

1. A method for maintaining an event-based subscription by a subscriber to
5 an events notification service, comprising the steps of:

defining a set of best-effort delivery variables and administrative limits to
be associated with a subscription to an events notification service;

subscribing to events delivered by said events notification service via said
subscription;

- 10 periodically checking the delivery of said events to said subscriber in
accordance with said administrative limits; and,

if said periodic checking of delivery of events indicates a failure in delivery
then canceling the subscription.

- 15 2. The method of claim 1 wherein said best-effort delivery variables include
a maximum time for delivery of an event to said subscriber.

3. The method of claim 1 wherein said events are sent using one-way event
notification messages.

- 20 4. The method of claim 3 wherein said step of periodically checking includes
sending and verifying delivery of a two-way event notification to the subscriber.

5. The method of claim 4 further comprising:
25 maintaining in a subscription cache a list of event notification

subscriptions, together with associated subscription identifiers.

6. The method of claim 5 wherein said subscription cache is stored on a persistent storage device.

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7. The method of claim 6 wherein each entry in said subscription cache includes, for the subscription identified by said entry, a value indicating the maximum time between periodic checks for the delivery of events for that subscription.

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8. The method of claim 7 wherein said entry for that subscription includes a value indicating the number of events to be delivered between delivery checks, together with a time stamp for any previous delivery checks.

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9. The method of claim 5 further comprising:
referencing the subscription cache to determine whether the next event notification message to a subscription should be sent as a one-way message or as a two-way message.

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10. The method of claim 5 wherein the entry corresponding to a subscription is removed when that subscription is cancelled.

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11. The method of claim 1 wherein the best-effort delivery variables are specified by the subscriber by specifying a quality of service when requesting the subscription.

12. An event server system for maintaining an event-based subscription by a subscriber client application to an event notification and bounding the life of said event-based subscription to the availability of a software object at said subscriber client, comprising:

5 an events server for receiving events from a posting client application and communicating said events to said subscriber client application;

an events broker in communication with said event server, for handling a request for a subscription from a subscriber for event notifications and matching the notification of said events to said subscribers via an event service;

10 an events service in communication with said events broker for delivering events to an object at said subscriber client application, and periodically verifying delivery of said event in accordance with administrative limits associated with said subscription; and,

15 an events check timer, for maintaining a number of event deliveries, and communicating said number of event deliveries to said events service for use in said periodically verifying delivery.

13. The event server of claim 12 wherein said best-effort delivery variables include a maximum time for delivery of an event to said subscriber.

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14. The event server of claim 12 wherein said events are sent using one-way event notification messages.

15. The event server of claim 14 wherein said event service periodically
25 verifies delivery of said event associated with said subscription by sending a

two-way event notification to the subscriber.

16. The event server of claim 15 further comprising:
a subscription cache containing a list of event notification subscriptions,
5 together with associated subscription identifiers.

17. The event server of claim 16 wherein said subscription cache is stored on
a persistent storage device.

10 18. The event server of claim 17 wherein each entry in said subscription
cache includes, for the subscription identified by said entry, a value indicating the
maximum time between periodic checks for the best-effort delivery of events for
that subscription.

15 19. The event server of claim 18 wherein said entry for that subscription
includes a value indicating the number of events to be delivered between delivery
checks, together with a time stamp for any previous delivery checks.

20 20. The event server of claim 16 wherein the events service references the
subscription cache to determine whether the next event notification message to
a subscription should be sent as a one-way message or as a two-way message

25 21. The event server of claim 16 wherein the entry corresponding to a
subscription is removed when that subscription is cancelled

22. The event server of claim 12 wherein the best-effort delivery variables are specified by the subscriber by specifying a quality of service when requesting the subscription.

5 23. Computer-readable instructions for bounding the life of an event-based subscription to the availability of an object on an event server, which when read and executed by a computer cause said computer to perform the steps of:

defining a set of best-effort delivery variables and administrative limits to be associated with said subscription to an events notification service;

10 subscribing to events delivered by said events notification service via said subscription;

periodically checking the delivery of said events to said subscriber, in accordance with said administrative limits; and,

15 if said periodic checking of delivery of events indicates a failure in delivery then canceling the subscription.

24. The computer readable instructions of claim 23 wherein said best-effort delivery variables include a maximum time for delivery of an event to said subscriber.

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25. The computer readable instructions of claim 23 wherein said events are sent using one-way event notification messages.

26. The computer readable instructions of claim 25 wherein said step of periodically checking includes sending and verifying delivery of a two-way event

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notification to the subscriber.

- 5 27. The computer readable instructions of claim 26 further comprising:
instructions for maintaining in a subscription cache a list of event
notification subscriptions, together with associated subscription identifiers.
28. The computer readable instructions of claim 27 wherein said subscription
cache is stored on a persistent storage device.
- 10 29. The computer readable instructions of claim 28 wherein each entry in said
subscription cache includes, for the subscription identified by said entry, a value
indicating the maximum time between periodic checks for the delivery of events
for that subscription.
- 15 30. The computer readable instructions of claim 29 wherein said entry for that
subscription includes a value indicating the number of events to be delivered
between delivery checks, together with a time stamp for any previous delivery
checks.
- 20 31. The computer readable instructions of claim 27 further comprising:
instructions for referencing the subscription cache to determine whether
the next event notification message to a subscription should be sent as a one-
way message or as a two-way message
- 25 32. The computer readable instructions of claim 27 wherein the entry

corresponding to a subscription is removed when that subscription is cancelled

5 33. The computer readable instructions of claim 23 wherein the best-effort delivery variables are specified by the subscriber the sub parameters by specifying a quality of service when requesting the subscription.

34. A method for maintaining an event-based subscription by a subscriber to an events notification service including a plurality of events channels, comprising the steps of:

10 allowing a subscriber to create a subscription to an events channel of said events notification service, said subscription used to receive event notifications delivered by said events channel;

delivering said event notifications to said subscriber via a plurality of one-way messages;

15 periodically delivering said event notifications to said subscriber via a two-way message; and,

if said periodic delivery of event notifications by said two-way message fails, then canceling the subscription.

20 35. The method of claim 34 further comprising:
specifying a set of best-effort delivery variables including a maximum time for delivery of an event to said subscriber.

25 36. The method of claim 34 further comprising:
maintaining in a subscription cache a list of event notification

subscriptions, together with associated subscription identifiers.

37. The method of claim 36 wherein said subscription cache is stored on a persistent storage device.

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38. The method of claim 37 wherein each entry in said subscription cache includes, for the subscription identified by said entry, a value indicating the maximum time between periodic checks for the delivery of events for that subscription.

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39. The method of claim 38 wherein said entry for that subscription includes a value indicating the number of events to be delivered between periodic delivery checks, together with a time stamp for any previous delivery checks.

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40. The method of claim 39 further comprising:
referencing the subscription cache to determine whether the next event notification message to a subscription should be sent as a one-way message or as a two-way message.

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41. The method of claim 40 wherein the entry corresponding to a subscription is removed when that subscription is cancelled.

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42. The method of claim 35 wherein the best-effort delivery variables are specified by the subscriber by specifying a quality of service when requesting the subscription.